CONCRETE AND SOIL SAMPLING AND ANALYSIS PLAN

Former Pechiney Cast Plate, Inc., Facility
3200 Fruitland Avenue
Vernon, California

Prepared for:

Pechiney Cast Plate, Inc.

Prepared by:

AMEC Geomatrix, Inc.
510 Superior Avenue, Suite 200
Newport Beach, California 92663
(949) 642-0245

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Project No. 10627.003

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This report was prepared by the staff of AMEC Geomatrix, Inc., under the supervision of the Engineer and Geologist whose seals and signatures appear hereon.

The findings, recommendations, specifications, or professional opinions are presented within the limits described by the client, in accordance with generally accepted professional engineering and geologic practice. No warranty is expressed or implied.

Linda Conlan, PG
Senior Geologist

Calvin Hardcastle, PE
Principal Engineer

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CONCRETE AND SOIL SAMPLING AND ANALYSIS PLAN

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1.0 INTRODUCTION

AMEC Geomatrix, Inc. (AMEC; formerly Geomatrix Consultants, Inc. [Geomatrix]), has prepared this Sampling and Analysis Plan (SAP) to outline sampling and analysis procedures for characterization and verification sampling of concrete and soil for polychlorinated biphenyls (PCBs) at the Former Pechiney Cast Plate, Inc., Facility in Vernon, California (the Site; Figure 1). If additional characterization and/or verification work is necessary following conclusion of the work proposed in this SAP, additional concrete and soil sampling will be completed as described in this SAP. This SAP is to be utilized in conjunction with the PCB Notification Plan (Plan or Application) (AMEC, 2009a), Remedial Action Plan (AMEC, 2009b), Below Grade Demolition Plan (Geomatrix, 2006a), below-grade technical specifications, and other project-related documents pertinent to the work proposed in this SAP. The sampling procedures described in this SAP were designed using the Code of Federal Regulations (CFR), Title 40, Subchapter R, Toxic Substances Control Act (TSCA), Part 761, Subpart N (761.265 for porous surfaces) and Subpart O (761.283 and 761.286), which were used as an amended guide to U.S. Environmental Protection Agency's (U.S. EPA's) guidance, *Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls* (U.S. EPA, 2008), to develop a modified sampling approach that would be reasonable for this Site.

2.0 CHARACTERIZATION AND VERIFICATION SAMPLING

Characterization and verification sampling to assess the concentrations of PCBs in concrete and soil will be conducted by an AMEC field geologist/engineer under the supervision of a Professional Geologist or Professional Engineer. Site health and safety planning, utility clearance, sampling and analysis, sample handling, equipment decontamination, and waste profiling and disposal procedures, are described herein.

The Site-Specific Health and Safety Plan (HASP) (AMEC, 2009c) will be adhered to during the field activities performed by AMEC personnel as part of this SAP. The HASP will address the potential risks to the personnel performing the sampling activities proposed in this SAP. Utility locating and clearance will be the responsibility of the demolition contactor managing the Site.

2.1 CONCRETE CHARACTERIZATION SAMPLING (PCBS)

Concrete characterization testing has been previously conducted at the Site and the data are summarized in Appendix A of the Plan.

AMEC plans to conduct additional concrete testing to further support the on-site disposal of concrete containing PCBs below the site-specific remediation goal of 5.3 milligrams per kilogram (mg/kg) at the Site. The additional sampling locations will be selected randomly across the existing concrete floor slab and the data will be used to augment the concrete data presented in the Plan (AMEC, 2009a). The additional concrete characterization samples will be analyzed for PCBs using EPA Method 8082.

The additional concrete sampling will focus on collecting concrete core samples from randomly selected locations across the Site. Given the size of the remaining floor slabs (approximately 590,000 square feet), 40 CFR Part 761, Subpart N (761.265 for porous surfaces) and Subpart O (761.283 and 761.286) were used as an amended guide to U.S. EPA's guidance, *Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls* (U.S. EPA, 2008), to develop a modified sampling approach that would be reasonable for Site conditions. The sampling approach consists of a 40-foot by 40-foot grid spacing overlain across the Site, which is approximately synonymous with the spacing of the below grade footings and foundations. This grid was initiated in the northwest corner of the Site as shown on Figure 2.

In addition to the modifications to the sampling approach, Subpart O was further consulted to assess the minimum number of samples required for characterization sampling. According to Subpart O, the minimum number of samples required would be three for each matrix, with no upper limit specified for the total number of samples required. As noted in the Plan, over 250 concrete characterization samples have been collected and tested for PCBs. The additional sampling proposed in this SAP will be used to augment the existing data by the collection and analysis of 50 randomly selected concrete samples locations from the proposed 40-foot by 40-foot grid.

To determine the random sampling locations, each grid was numbered starting at number 1 in the northwest corner of the Site, and ending at number 455 in the southeast corner of the Site. Once numbered, a random number generator was used to select random numbers between 1 and 455. As each random number was generated, the sample point was marked at the intersection of grid nodes at the southeast corner of the numbered grid for concrete sampling. Random sample grid numbers were excluded if the grid number either (1) fell within an area proposed for the removal and off-site disposal of concrete containing PCBs at concentrations greater than 5.3 mg/kg; or (2) fell outside the building slab in asphalt covered parking lots and/or driveways.

Using this random selection methodology, 50 random sample locations were identified for testing. These sample locations are shown on Figure 2.

2.2 CONCRETE AND SOIL CHARACTERIZATION SAMPLING (PCB CONGENERS)

AMEC has developed an approach for sampling concrete floor slabs and soil for the presence of dioxin-like PCB congeners (also known as coplanar PCBs) at the Site. This sampling approach was developed to address U.S. EPA's concern that these coplanar PCBs may be present based on the age of the facility and the historical manufacturing operations. For the most part, the primary mixture of PCBs detected in soil and concrete at the Site has been Aroclor-1248, and to a lesser extent, Aroclor-1254 and Aroclor-1260.

The proposed sampling will target concrete and soil where total PCBs (the sum of Aroclor mixtures) were detected at concentrations below 5.3 mg/kg, which is the proposed risk-based remediation goal protective of potential future exposures to PCBs in shallow soils. Additional samples also will be collected from selected locations where total PCBs were detected at concentrations above 50 mg/kg.

Each proposed sample location will target concrete or soil where only one Aroclor was previously reported. Each sample will be analyzed for Aroclors using EPA Method 8082 and individual PCB congeners using EPA Method 1668B, provided sufficient laboratory capacity for this method is available at the time the samples are collected, otherwise EPA Method 1668A will be used.

The detected concentrations of dioxin-like congeners will be used to calculate the dioxin toxic equivalence (dioxin TEQ) for each sample. The dioxin TEQ of each sample will be plotted against its corresponding Aroclor concentration. A linear regression, through the origin, of dioxin TEQ versus Aroclor concentration will be made. Separate regressions will be made for concrete and soil. Additional subdivisions of soil or concrete may be made, based on geographic location or other exogenous factor(s) if the dioxin TEQ versus Aroclor plot suggests an effect of an exogenous factor on the relationship between dioxin TEQ and Aroclor concentration. The slope of the linear regression will be used as the estimator of the relationship between dioxin TEQ and Aroclor concentration. The uncertainty in the slope of the linear regression also will be calculated using a single-tailed Type I error probability of 0.05. The estimated relationship between dioxin TEQ and Aroclor concentration will be reported as the slope of the regression plus or minus the uncertainty in the slope.

The estimated relationship will be used to (1) estimate dioxin TEQ concentrations associated with previous sampling results; (2) support (or refine) the site-specific PCB remediation goals; and (3) support remediation confirmation sampling. If the relationship differs by geographic location or other exogenous factor(s), the corresponding relationship will be used.

2.2.1 Proposed Concrete Sample Locations

The proposed concrete sample locations are listed below and shown on Figure 3.

- Former sample location DC-22: Aroclor-1260 was detected in concrete at a concentration of 0.47 mg/kg;
- Former sample location DC-23: Aroclor-1260 was detected in concrete at a concentration of 0.84 mg/kg;
- Former sample location DC-52: Aroclor-1248 was detected in concrete at a concentration of 1.6 mg/kg;
- Former sample location DC-154: Aroclor-1248 was detected in concrete at a concentration of 3.7 mg/kg;
- Former sample location DC-168: Aroclor-1248 was detected in concrete at a concentration of 150 mg/kg;
- Former sample location C-12: Aroclor-1254 was detected in concrete at a concentration of 1.8 mg/kg;
- Former sample location C-14: Aroclor-1260 was detected in concrete at a concentration of 2.0 mg/kg; and
- Former sample location B-1: Aroclor-1248 was detected in concrete at a concentration of 0.24 mg/kg.

In addition, one sample location was selected to target concrete where Aroclor mixtures have not been detected. An additional concrete sample will be collected near former sample location DC-25. PCBs were not previously detected in concrete (concentration is less than 0.29 mg/kg) at this location.

2.2.2 Proposed Soil Sample Locations

Soil sampling will focus on soils in the upper 15 feet, where potential direct contact exposures may occur; soil containing PCBs at depths greater than 15 feet are proposed to be left in place (no exposure pathway or risk to groundwater). Soil samples are proposed for collection from 12 locations summarized in the following text and shown on Figures 4a and 4b. The sample locations are based on the PCB concentrations in soils shown on Figures 5a and 5b of the Plan, and the proposed remediation areas delineated on Figure 9 of the Plan.

- Former boring HW-S: Aroclor-1248 remains in soil at a concentration of 6.9 mg/kg at 3 feet below ground surface (bgs). At this location, one soil sample will be collected at approximately 3 feet bgs.

- Former boring SWO-6-2: Aroclor-1254 remains in soil at a concentration of 0.15 mg/kg at 5 feet bgs. At this location, one soil sample will be collected at approximately 5 feet bgs.

- Former boring H4-F: Aroclor-1248 remains in soil at a concentration of 3.2 mg/kg at 5 feet bgs. At this location, one soil sample will be collected at approximately 5 feet bgs.

- Former boring H-8F: Aroclor-1248 and Aroclor-1260 remain in soil at concentrations of 1.0 mg/kg and 0.3 mg/kg, respectively, at zero feet bgs (near surface). At this location, one soil sample will be collected at approximately zero feet bgs (near surface).

- Former boring B-2F: Aroclor-1260 remains in soil at a concentration of 1.2 mg/kg at 1 foot bgs. At this location, one soil sample will be collected at approximately 1 foot bgs.

- Former boring IWDP-W (Gray): Aroclor-1254 remains in soil at a concentration of 4.0 mg/kg (original sample depth collected along the sidewall is unknown). At this location, two soil samples will be collected at approximately 5 and 10 feet bgs.

- Former boring SWO7-M: Aroclor-1248 remains in soil at a concentration of 4.5 mg/kg at 6 feet bgs. At this location, one soil sample will be collected at approximately 6 feet bgs.

- Former boring SWO7-N: Aroclor-1248 remains in soil at a concentration of 3.4 mg/kg at 6 feet bgs. At this location, one soil sample will be collected at approximately 6 feet bgs.

- Former boring SWC-3: Aroclor-1248 remains in soil at a concentration of 0.25 mg/kg at 1 foot bgs. At this location, one soil sample will be collected at approximately 1 foot bgs.

- Former boring #155: Aroclor-1260 remains in soil at a concentration of 2.1 mg/kg at 2 feet bgs. At this location, one soil sample will be collected at approximately 2 feet bgs.

- Former boring #10: Aroclor-1248 remains in soil at a concentration of 0.35 mg/kg at 2.7 feet bgs. At this location, one soil sample will be collected at approximately 2.7 feet bgs.

- Former boring #71: Aroclor-1260 remains in soil at a concentration of 0.57 mg/kg at 2.3 feet bgs and Aroclor-1248 remains in soil at a concentration of 0.14 mg/kg at 11.1 feet bgs. At this location, one soil sample will be collected at approximately 2.3 feet bgs.

- Former boring #39: Aroclor-1248 remains in soil at a concentration of 6.7 mg/kg at 2.2 feet bgs. At this location, one soil sample will be collected at approximately 2.2 feet bgs.

- Former boring #41: Aroclor-1248 remains in soil at a concentration of 2.0 mg/kg at 2.6 feet bgs. At this location, one soil sample will be collected at approximately 2.6 feet bgs.

- Location between former borings #40 and #95: Aroclor-1248 was previously detected at the concentrations listed below. Two soil samples will be collected at a location between former borings #40 and #95, at approximately 5 and 10 feet bgs.

    - Boring #40: At depths at or above 15 feet, PCBs (Aroclor-1248) remain in soil at concentrations of 440J ("J"; estimated concentration) and 5.7J mg/kg at 8.5 and 11.5 feet bgs, respectively. At 21.5 feet bgs, PCBs (Aroclor-1248) remain in soil at a concentration of 2,000J mg/kg.

    - Boring #95: At depths at or above 15 feet, PCBs (Aroclor-1248) remain in soil at a concentration of 77 mg/kg at 10.5 feet bgs. At 20.5 feet bgs, PCBs (Aroclor-1248) remain in soil at a concentration of 2,000 mg/kg.

2.3 SOIL CHARACTERIZATION SAMPLING BENEATH CONCRETE SLABS

Additionally, in areas where soil characterization data do not already exist beneath concrete slabs impacted with PCB at concentrations above 5.3 mg/kg (Figure 2), additional soil characterization samples for PCB analyses will be collected as described in Section 6.1.1.3 of the Plan (AMEC, 2009a) and as described in this section. Our approach for the sampling is based on the 10-foot grid spacing modified from Subpart N and to target soil directly beneath areas with the highest concentrations of PCBs detected in concrete. The frequency by which these soil characterization samples will be collected will be determined in the field using the sampling frequency provided on the next page.

PCB-impacted Concrete Slab Areas (in feet)	Grid Spacing	Additional Characterization Samples	Estimated Number of Soil Samples
Horizontal dimensions up to approximately 10 and 10 feet	none	- 1 soil sample; at the center of the exposed soil area, or directly beneath the location where the concrete core sample exhibited the highest PCB concentration	1
Horizontal dimensions up to approximately 20 by 20 feet	Grid divided into 2 equal parts	- 2 soil samples; one from the center of each part of the grid - 1 soil sample; directly beneath the location where the concrete core sample exhibited the highest PCB concentration	3
Horizontal dimensions up to approximately 50 and 50 feet	Grid divided into 4 equal parts	- 4 soil samples; one from the center of each part of the grid - 1 soil sample; directly beneath the location where the concrete core sample exhibited the highest PCB concentration	5

The actual number of characterization soil samples collected from beneath the PCB-impacted concrete slabs will be determined in the field based on the size of the area and the location of adjacent footings and below grade structures. To collect the characterization soil samples beneath the concrete slabs, the concrete at each proposed sampling location will require coring. The concrete coring will be completed in accordance with the procedures previously outlined in Section 2.1. In addition, a similar soil sampling grid approach may be applied during the implementation of RAP in areas where additional concrete is observed with PCB concentrations above 5.3 mg/kg.

2.3 SOIL VERIFICATION SAMPLING (PCBS)

Soil samples will be collected for verification purposes from areas where PCB-impacted soil is removed and/or observed during the below-grade demolition and remediation activities. The soil samples will be collected directly from the backhoe bucket of the excavating equipment. In some cases, soil samples may also be collected using hand auger or other drilling methods.

In general, verification samples will be collected from "small area" excavations (less than 100 cubic yards of soil) by dividing the excavation into four equal parts using a grid pattern. A typical grid pattern for a small excavation is shown on Figure 5. Four side wall soil samples

will be collected, one on each sidewall at the location where the gird line intersects the sidewall (horizontal locations). At the grid line point on the wall, the sample location will be placed at a vertical midpoint between the top and bottom of the excavation wall. At the base of the excavation, two soil samples will be collected from areas located in diagonally opposite grids of the four grid squares, equally representing the excavation bottom.

In general, verification samples will be collected from "large area" excavations (greater than 100 cubic yards of soil) by dividing the excavation into at least six equal parts in a grid pattern. A typical grid pattern for a large excavation is shown on Figure 5. At least six side wall soil samples will be collected along the side walls at the location where the grid line intersects the wall (horizontal). At the grid line point on the wall, the sample location will be placed at a vertical midpoint between the top and bottom of the excavation. At least two sidewall samples will be collect from the longer walls and at least one side wall sample will be collect from the shorter wall. At a minimum, verification samples will be spaced horizontally at a distance of at least 10 to 15 feet along the side walls. At the base of the excavation, at least three soil samples will be collected from areas located in diagonally opposite grids of the six grid squares, equally representing the excavation bottom. The actual number of verification samples collected from the "large area" excavation will be determined in the field based on the size of the excavation.

The number of verification soil samples collected and analyzed for PCBs will be determined in the field. The soil samples will be analyzed under 24- to 48-hour turnaround to support the demolition activities and will be analyzed for PCBs using EPA Method 8082.

Additional characterization soil samples may be collected based on observations made during demolition and soil removal and will be included as part of the field quality assurance/quality control (QA/QC) program for the project. The QA/QC procedures are discussed in the QAPP (Geomatrix, 2007).

3.0 SAMPLE HANDLING PROCEDURES

Sample handling procedures applicable to this work will include sample containers and preservation, sample labeling, sample packaging, shipment, and chain-of-custody procedures; they are described in the following subsections.

3.1 SAMPLE COLLECTION AND PRESERVATION

Concrete and soil samples will be collected and preserved using the following methods and protocols.

3.1.1 Concrete

Concert cores measuring approximately 1.5 inches in diameter and 3 inches in length (in accordance with 40 CFR Part 761; Subpart O; Section 761.286) will be collected at the proposed concrete sample locations using concrete coring equipment utilized by our subcontractor, Rice General Concrete Cutting Services of Long Beach, California. The concrete cores will be placed individually in resealable plastic bags and stored in an ice-chilled cooler. The core samples will be transported to the analytical laboratory, American Analytics of Chatsworth, California (American Analytics), or the laboratory selected for the congener testing, to be crushed prior to analysis.

Sample documentation, handling and transport will be conducted in accordance with the site-specific QAPP (Geomatrix, 2007).

3.1.2 Soil

Soil samples will be collected by hand sampling methods or using direct-push drilling methods. During hand sampling or drilling, an AMEC field geologist will describe soil encountered using the visual-manual procedures described in ASTM International Standard Method D2488, which uses the Unified Soil Classification System for guidance. Soil samples will be collected in acetate liners or glass jars. No preservatives are required for soil samples collected and submitted for PCB analysis. New acetate liners will be provided by InterPhase. Clean, pre-packaged glass jars and containers will be provided by the laboratory. Soil samples, once packaged and labeled, will be placed individually in re-sealable plastic bags, and stored in an ice-chilled cooler for shipment to the laboratory.

3.2 SAMPLE IDENTIFICATION AND LABELING

Sample identification will include a sample-specific identification code linking the sample to descriptive information recorded in field documents. A separate label will be affixed to each sample container with a self-adhesive backing. The sample identification code will consist of the following components:

- sequential sample location number (1, 2, 3, etc.);
- two letter code, describing the type of sample (SS = soil sample; DC = concrete sample; and DW = decontamination water sample); and
- two-digit sequential number describing the sampling depth (01 = the first sample colleted at 5 feet below grade, 02 = the second sample collected at 10 feet below grade, etc.) or sequential sample from a side wall of an excavation (01 = the first side wall sample collected from the east wall, etc.).

As an example, a sample labeled 01-SS-01 would represent a soil sample collected from side wall sample location number 1, at about 6 inches into the side wall. Sample labeled 02-SS-01 would represent a soil sample collected from the bottom of the excavation at sample location 2, at a depth of 6-inches below the base of the excavation. Sample labeled 03-DC-01 would represent a concrete sample collected at location 3.

3.3 SAMPLE PACKAGING, SHIPMENT, AND CHAIN-OF-CUSTODY

Upon sample collection and labeling, concrete and soil and field QA/QC samples will remain sealed within the sampling containers until analysis is conducted by the laboratory. Ice contained in resealable plastic bags will be placed in the ice chest and used to keep the samples chilled. The condition of samples will be inspected prior to shipment.

Chain-of-custody (COC) procedures will be followed to ensure field sample integrity and tracking of sample custody. Each time a sample changes hands, both the sender and the receiver will sign and date the COC form. When a sample shipment is sent to the laboratory, the top signature copy is enclosed in plastic and secured to the inside of the sample shipment containers. A COC record will be completed for each shipping container.

4.0 LABORATORY ANALYSES

The concrete core samples proposed for PCB analyses will be analyzed by American Analytics or another laboratory for Aroclors listed under EPA Method 8082. The reporting limits for all Aroclors listed under EPA Method 8082 will be 200 micrograms per kilogram, or 0.2 mg/kg.

The soil and concrete samples proposed for congener testing will be analyzed for 19 of the 209 dioxin-like PCB congeners listed under EPA Method 1668B, provided sufficient laboratory capacity for this method is available at the time the samples are collected, otherwise EPA Method 1668A will be used. The reporting limits for the 19 congeners listed under EPA Method 1668B are listed in the table on the next page.

PCB CONGENER	PCB Congener No.	Soil/Concrete Average DL (ng/Kg, ppt)
3,3',4,4'-Tetrachlorobiphenyl	77	0.60
3,4,4',5-Tetrachlorobiphenyl	81	0.70
2,3,3',4,4'-Pentachlorobiphenyl	105	0.64
2,3,4,4',5-Pentachlorobiphenyl	114	0.68
2,3',4,4',5-Pentachlorobiphenyl	118	0.55
2',3,4,4',5-Pentachlorobiphenyl	123	0.63
3,3',4,4',5-Pentachlorobiphenyl	126	0.74
2,3,3',4,4',5-Hexachlorobiphenyl	156	0.62
2,3,3',4,4',5'-Hexachlorobiphenyl	157	0.62
2,3',4,4',5,5'-Hexachlorobiphenyl	167	0.42
3,3',4,4',5,5'-Hexachlorobiphenyl	169	0.48
2,3,3',4,4',5,5'-Heptachlorobiphenyl	189	0.46

Note: The detection limits (DLs) listed are estimated; ng/kg = nanograms per kilogram. ppt = parts per trillion. The detection limits will be updated once an analytical laboratory is selected.

5.0 EQUIPMENT DECONTAMINATION

Downhole drilling and sampling equipment (including concrete coring equipment, hand augers, etc.) will be decontaminated prior to first use and between sampling locations (U.S. EPA, 2008). To reduce the potential for cross-contamination, re-usable sampling equipment will be decontaminated using the following procedures:

- wash and scrub in non-phosphate detergent and potable water (first bucket);
- rinse or soak in potable water (second bucket);
- rinse in deionized (DI) water (third bucket);
- additional rinse in DI water (fourth bucket); and
- final rinse/spray with hexane and air dry.

Disposable nitrile gloves will be worn during all decontamination activities.

6.0 WASTE CHARACTERIZATION AND DISPOSAL

Concrete slurry, soil cuttings, and decontamination wastewater will be stored on-site in separate Department of Transportation-approved 55-gallon labeled drums until the investigation-derived waste have been properly profiled, manifested, and disposed off-site at a licensed disposal facility as specified in 40CFR 761.61 for PCB-remediation waste.

7.0 SITE SURVEY

At the completion of the characterization sampling, sample locations will be marked on site maps relative to existing sample locations. After verification sampling and prior to excavation backfill, the perimeter of the excavation and sample points (when accessible) will be surveyed (vertical and horizontal control) by a licensed surveyor. If the sample points are not accessible to the surveyor, the confirmation soil samples will be measured in the field with respect to a corner of the excavation.

8.0 REFERENCES

AMEC Geomatrix, Inc. (AMEC), 2009a, Polychlorinated Biphenyls Notification Plan, Former Pechiney Cast Plate, Inc., Facility, Vernon, California, July 10.

AMEC, 2009b, Remedial Action Plan, Pechiney Cast Plate Facility, Vernon, California, September.

AMEC, 2009c, Site Health and Safety Plan, Pechiney Cast Plate Facility, Vernon, California, July 9.

Geomatrix Consultants, Inc. (Geomatrix), 2006a, Below Grade Demolition Plan, Former Pechiney Cast Plate Facility, Vernon, California, December.

Geomatrix Consultants, Inc., 2007, Quality Assurance Project Plan, Former Pechiney Cast Plate Facility, Vernon, California, July 20.

U.S. Environmental Protection Agency, 2008, Office of Environmental Measurement and Evaluation, Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs), reissued July 22.

FIGURES

Basemap modified from U.S.G.S. 7.5 minute quadrangle maps Los Angeles 1966, California, photo-revised 1981 and 1994; and South Gate 1964, California, photo-revised 1981.

APPROXIMATE SCALE IN FEET
0 1000 2000
0 300 600
APPROXIMATE SCALE IN METERS

SITE LOCATION MAP
Former Pechiney Cast Plate Facility
3200 Fruitland Avenue
Vernon, California

By: pah	Date: 07/27/10	Project No. 10627.003
AMEC Geomatrix		Figure 1

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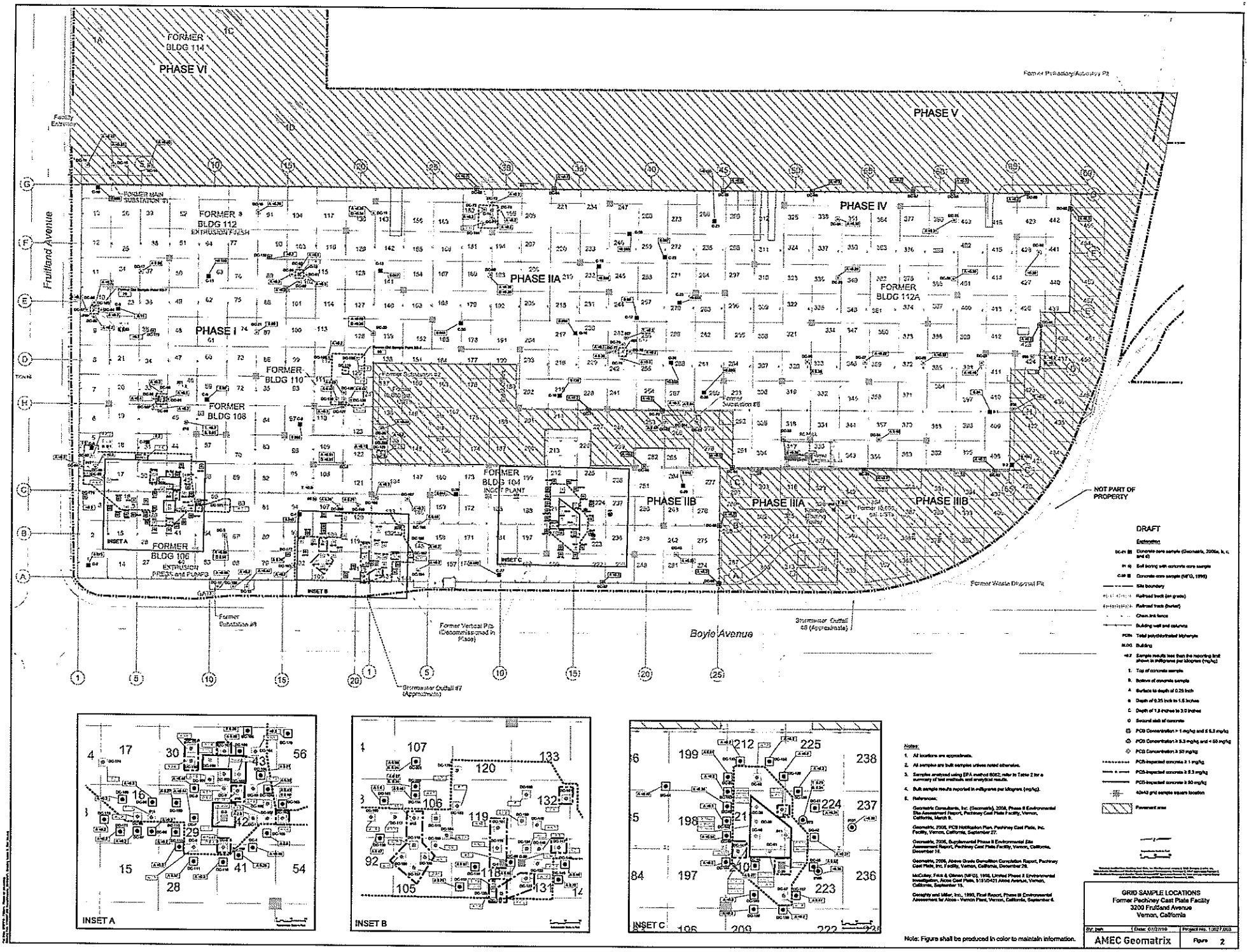


DRAFT

Explanation:

- Concrete core sample (Geomatrix, 2008a, b, c, and d)
- Soil boring with concrete core sample
- Concrete core sample (MFG, 1999)
- Site boundary
- Railroad track (on grade)
- Railroad track (buried)
- Chain link fence
- Building wall and columns
- PCBs Total polychlorinated biphenyls
- BLDG Building
- <0.2 Sample results less than the reporting limit shown in milligrams per kilogram (mg/kg)
- T Top of concrete sample
- B Bottom of concrete sample
- A Surface to depth of 0.25 inch
- a Depth of 0.25 inch to 1.5 inches
- C Depth of 1.5 inches to 3.0 inches
- G Second slab of concrete
- PCB Concentration > 1 mg/kg and ≤ 8.3 mg/kg
- PCB Concentration > 8.3 mg/kg and < 50 mg/kg
- PCB Concentration ≥ 50 mg/kg
- PCB-impacted concrete ≥ 1 mg/kg
- PCB-impacted concrete ≥ 8.3 mg/kg
- PCB-impacted concrete ≥ 50 mg/kg
- 40x40 grid sample square location
- Pavement area

Notes:

1. All locations are approximate.
2. All samples are bulk samples unless noted otherwise.
3. Samples analyzed using EPA method 8082; refer to Table 2 for a summary of test methods and analytical results.
4. Bulk sample results reported in milligrams per kilogram (mg/kg).
5. References:

Geomatrix Consultants, Inc. (Geomatrix), 2008, Phase II Environmental Site Assessment Report, Pechiney Cast Plate Facility, Vernon, California, March 9.

Geomatrix, 2008, PCB Notification Plan, Pechiney Cast Plate, Inc. Facility, Vernon, California, September 27.

Geomatrix, 2008, Supplemental Phase II Environmental Site Assessment Report, Pechiney Cast Plate Facility, Vernon, California, December 16.

Geomatrix, 2008, Above Grade Demolition Completion Report, Pechiney Cast Plate, Inc. Facility, Vernon, California, December 29.

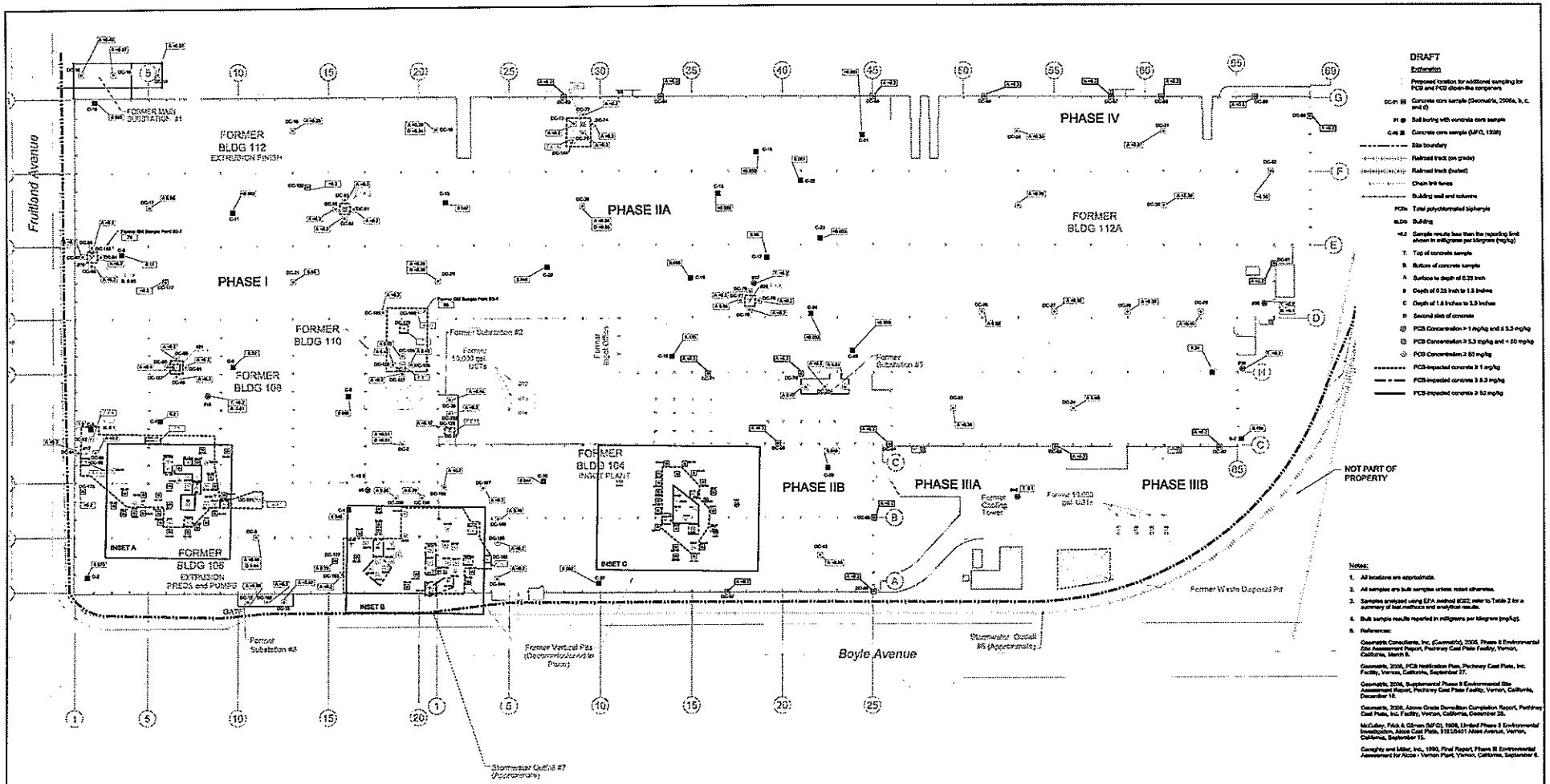
McCulley, Frick & Gilman (MFG), 1999, Limited Phase II Environmental Investigation, Alcoa Cast Plate, 5151/5431 Alcoa Avenue, Vernon, California, September 15.

Geraghty and Miller, Inc., 1990, Final Report, Phase III Environmental Assessment for Alcoa - Vernon Plant, Vernon, California, September 4.

Note: Figure shall be produced in color to maintain information.

GRID SAMPLE LOCATIONS
Former Pechiney Cast Plate Facility
3200 Fruitland Avenue
Vernon, California

By: bah	Date: 01/22/10	Project No.: 1307.003
AMEC Geomatrix		Figure 2



Notes:

1. All locations are approximate.
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4. Bulk sample results reported in milligrams per kilogram (mg/kg).
5. References:

Geomatrix Consultants, Inc. (Geomatrix), 2006, Phase II Environmental Site Assessment Report, Pechiney Cast Plate Facility, Vernon, California, March 8.

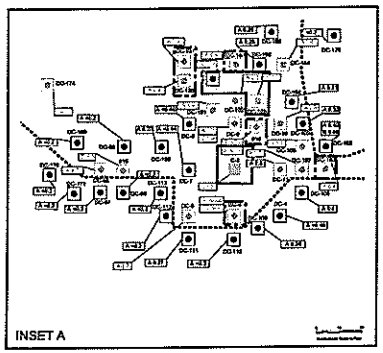
Geomatrix, 2006, PCB Notification Plan, Pechiney Cast Plate, Inc. Facility, Vernon, California, September 27.

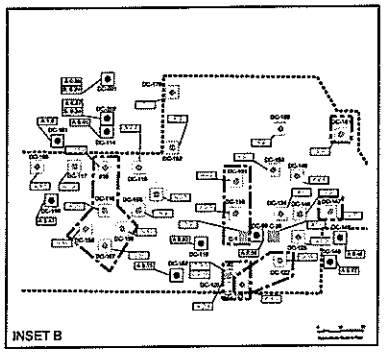
Geomatrix, 2006, Supplemental Phase II Environmental Site Assessment Report, Pechiney Cast Plate Facility, Vernon, California, December 18.

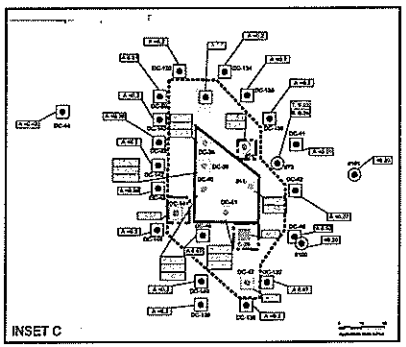
Geomatrix, 2006, Above Grade Demolition Completion Report, Pechiney Cast Plate, Inc. Facility, Vernon, California, December 28.

McCulley, Frick & Gilman (MFG), 1998, Limited Phase II Environmental Investigation, Alcoa Cast Plate, 3150-3401 Alcoa Avenue, Vernon, California, September 15.

Geraghty and Miller, Inc., 1990, Final Report, Phase III Environmental Assessment for Alcoa / Vernon Plant, Vernon, California, September 6.



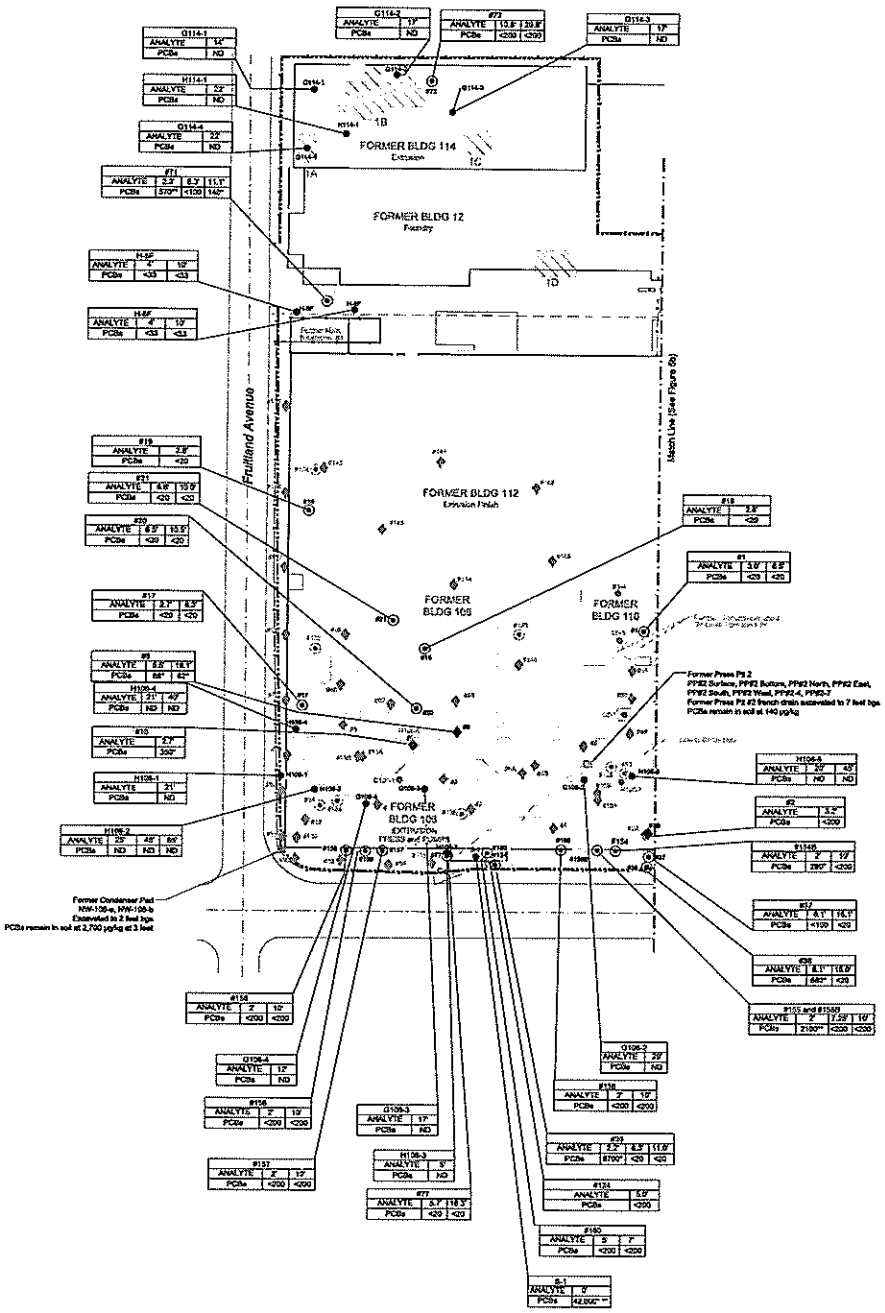




Note: Figure shall be reproduced in color to maintain information.

PROPOSED ADDITIONAL CONCRETE SAMPLE LOCATIONS
Former Pechiney Cast Plate Facility
3200 Fruitland Avenue
Vernon, California

By: pah	Date: 07/27/16	Project No. 10627.003
AMEC Geomatrix	Figure 3	



Explanation

- Proposed location for co-sampling for PCBs and PCB dielectric compounds
- #76 — Soil vapor sampling point, 2005 and 2006
- #115 — Soil boring, 2005 and 2006
- B-1 — Soil boring, 1996 and 1998
- Sample taken before and during excavation activities
- Site boundary
- Chain link fence
- Previous excavation (all previous limits of excavation are approximate)
- Previously decommissioned and concrete capped buried structures with PCB impacts in former Alcoa Building 114 (Orski 1998b)
- BLDG — Building
- 6.5' — Sample depth in feet below ground surface
- <3.0 — Sample result is less than the reporting limit shown
- E — Previously excavated soil or removed during above grade demolition
- ND — Not detected
- Σ — Sum of Aroclor 1242 and Aroclor 1260
- * — Aroclor 1242
- ** — Aroclor 1260
- PCBs — Polychlorinated Biphenyls (PCBs) reported in micrograms per kilogram (µg/kg)

NOTES:

1. All locations are approximate.
2. Samples analyzed using EPA methods 8082 and 8083.
3. References:

A.J. Linki, Jr., 1998, Aluminum Company of America, Demolition of The Alcoa Cast Plate Facility, Parcels 5, 7, and 8, Vernon, California, July 29.

A.J. Linki, Jr., 1998, Aluminum Company of America, Demolition of The Alcoa Cast Plate Facility, Parcels 5, 7, and 8, Vernon, California, June 30.

Montgomery Knudson Corporation, 1998, Pits, Sumps, and Tunnels Soil Characterization Report, Aluminum Company of America, Vernon, Los Angeles County, California, March 26.

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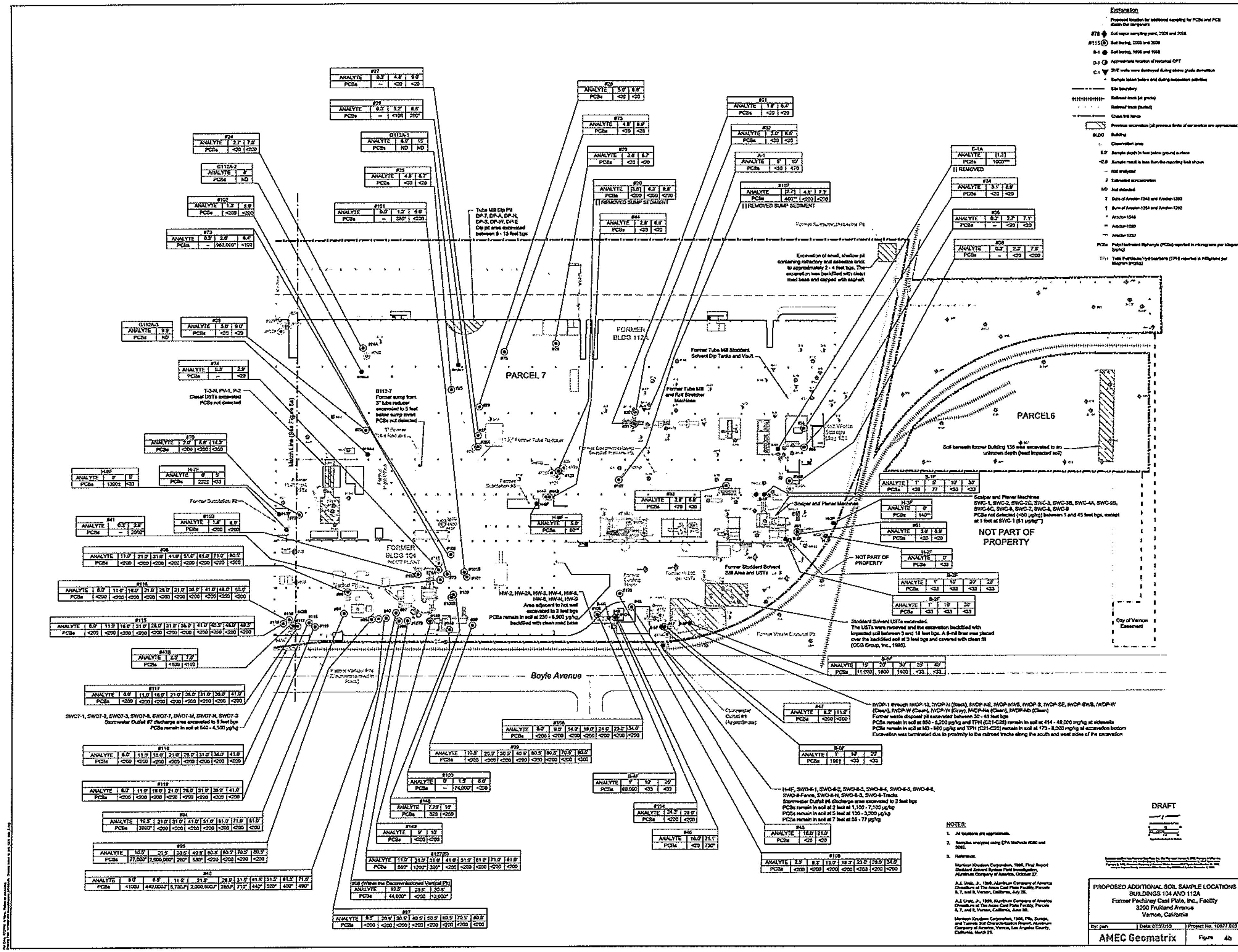
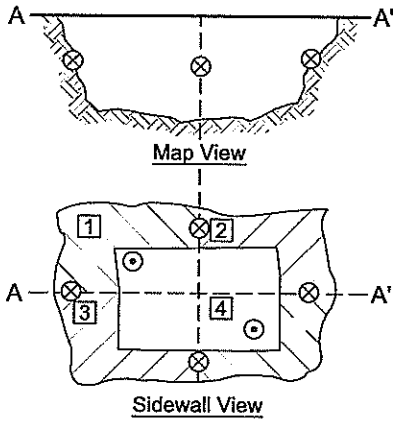
PROPOSED ADDITIONAL SOIL SAMPLE LOCATIONS
FORMER BUILDINGS 108, 109, AND 112
Former Pechiney Cast Plate, Inc., Facility
3200 Fruitland Avenue
Vernon, California

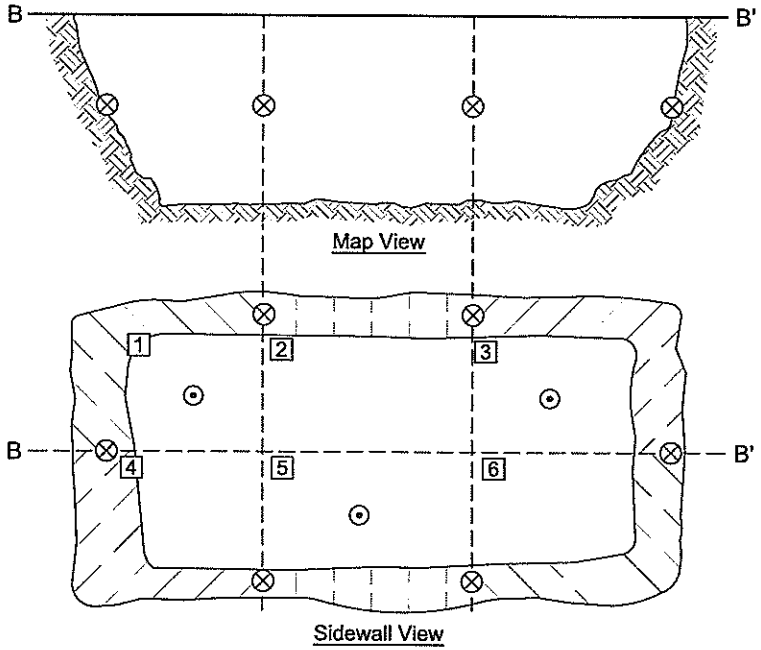
By: pah	Date: 07/27/10	Project No. 10627.003
AMEC Geomatrix	Figure	4a


PARCEL 7
PARCEL6
FORMER BLDG 112A
FORMER BLDG 104
NOT PART OF PROPERTY
Boyle Avenue
Explanation
NOTES:
1. All locations are approximate.
DRAFT
PROPOSED ADDITIONAL SOIL SAMPLE LOCATIONS
BUILDINGS 104 AND 112A
Former Pechiney Cast Plate, Inc., Facility
3200 Fruitland Avenue
Vernon, California
AMEC Geomatrix
Figure 4b

SMALL AREA EXCAVATION SAMPLE LOCATION LAYOUT
(Less Than 100 Cubic Yards of Soil)



LARGE AREA EXCAVATION SAMPLE LOCATION LAYOUT
(Greater Than 100 Cubic Yards of Soil)



Explanation

- A——A' Line of cross section
- Grid line
- [6] Grid area
- ⊗ Side wall sample
- ⊙ Bottom sample

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Drawing not to scale

EXCAVATION SAMPLE GRIDS WITH SAMPLE LOCATION LAYOUT
Former Pechiney Cast Plate Facility
3200 Fruitland Avenue
Vernon, California

By: pah	Date: 07/27/10	Project No. 10627.003
AMEC Geomatrix		Figure 5